Clinical Update

ADAPTED FROM:

2025 AHA/ACC/AANP/AAPA/ABC/ACCP/ACPM/AGS/AMA/ASPC/NMA/PCNA/SGIM Guideline for the Prevention, Detection, Evaluation and Management of High Blood Pressure in Adults

American Heart Association.

AHA Clinical Update PPTX

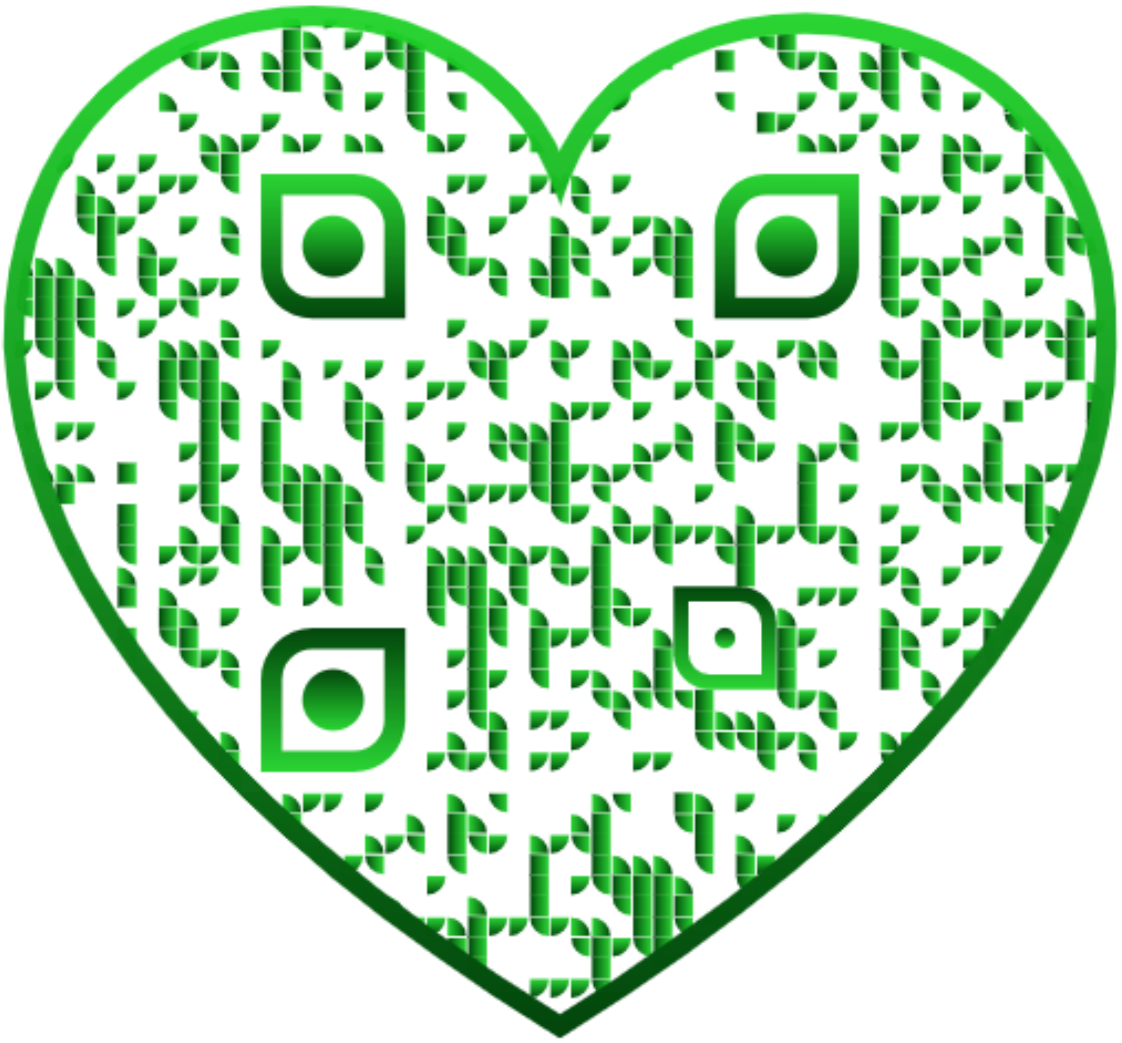

Table 1.
Applying Class of Recommendation and Level of Evidence to Clinical Strategies, Interventions, Treatments, or Diagnostic Testing in Patient Care

CLASS (STRENGTH) OF RECOMMENDATION	
CLASS 1 (STRONG)	**Benefit >>> Risk**
Suggested phrases for writing recommendations: • Is recommended • Is indicated/useful/effective/beneficial • Should be performed/administered/other • Comparative-Effectiveness Phrases†: – Treatment/strategy A is recommended/indicated in preference to treatment B – Treatment A should be chosen over treatment B	
CLASS 2a (MODERATE)	**Benefit >> Risk**
Suggested phrases for writing recommendations: • Is reasonable • Can be useful/effective/beneficial • Comparative-Effectiveness Phrases†: – Treatment/strategy A is probably recommended/indicated in preference to treatment B – It is reasonable to choose treatment A over treatment B	
CLASS 2b (Weak)	**Benefit ≥ Risk**
Suggested phrases for writing recommendations: • May/might be reasonable • May/might be considered • Usefulness/effectiveness is unknown/unclear/uncertain or not well-established	
CLASS 3: No Benefit (MODERATE)	**Benefit = Risk**
Suggested phrases for writing recommendations: • Is not recommended • Is not indicated/useful/effective/beneficial • Should not be performed/administered/other	
CLASS 3: Harm (STRONG)	**Risk > Benefit**
Suggested phrases for writing recommendations: • Potentially harmful • Causes harm • Associated with excess morbidity/mortality • Should not be performed/administered/other	

LEVEL (QUALITY) OF EVIDENCE‡	
LEVEL A	
• High-quality evidence‡ from more than 1 RCT • Meta-analyses of high-quality RCTs • One or more RCTs corroborated by high-quality registry studies	
LEVEL B-R	**(Randomized)**
• Moderate-quality evidence‡ from 1 or more RCTs • Meta-analyses of moderate-quality RCTs	
LEVEL B-NR	**(Nonrandomized)**
• Moderate-quality evidence‡ from 1 or more well-designed, well-executed nonrandomized studies, observational studies, or registry studies • Meta-analyses of such studies	
LEVEL C-LD	**(Limited Data)**
• Randomized or nonrandomized observational or registry studies with limitations of design or execution • Meta-analyses of such studies • Physiological or mechanistic studies in human subjects	
LEVEL C-EO	**(Expert Opinion)**
• Consensus of expert opinion based on clinical experience.	

COR and LOE are determined independently (any COR may be paired with any LOE).

A recommendation with LOE C does not imply that the recommendation is weak. Many important clinical questions addressed in guidelines do not lend themselves to clinical trials. Although RCTs are unavailable, there may be a very clear clinical consensus that a particular test or therapy is useful or effective.

* The outcome or result of the intervention should be specified (an improved clinical outcome or increased diagnostic accuracy or incremental prognostic information).

† For comparative-effectiveness recommendation (COR 1 and 2a; LOE A and B only), studies that support the use of comparator verbs should involve direct comparisons of the treatments or strategies being evaluated.

‡ The method of assessing quality is evolving, including the application of standardized, widely-used, and preferably validated evidence grading tools; and for systematic reviews, the incorporation of an Evidence Review Committee.

COR indicates Class of Recommendation; EO, expert opinion; LD, limited data; LOE, Level of Evidence; NR, nonrandomized; R, randomized; and RCT, randomized controlled trial.

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Definition and Classification of Blood Pressure

Blood Pressure Category	SBP		DBP
Normal	< 120 mmHg	and	< 80 mmHg
Elevated	120 to 129 mmHg	and	< 80 mmHg
Hypertension			
Stage 1 Hypertension	130 to 139 mmHg	or	80 to 89 mmHg
Stage 2 Hypertension	≥ 140 mmHg	or	≥ 90 mmHg

COR	RECOMMENDATIONS
1	In adults, BP should be categorized as normal, elevated, or stage 1 or stage 2 hypertension to prevent and treat high BP.

Abbreviations: BP indicates blood pressure; DBP, diastolic blood pressure; and SBP, systolic blood pressure.

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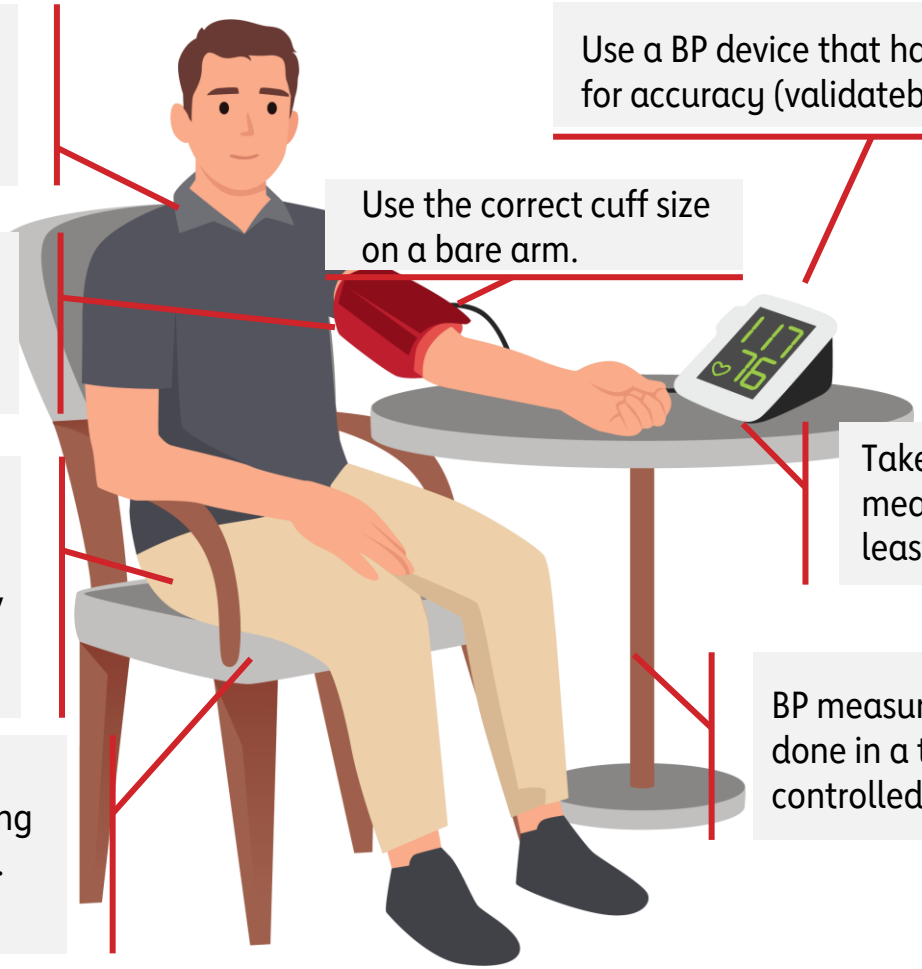
Best Practices for Accurate In-Office Blood Pressure Measurement

Avoid caffeine, exercise, and smoking for at least 30 minutes before.

The patient's arm should be supported at heart level.

Patient should be relaxed, sitting in a chair (feet flat, legs uncrossed, and back supported) for at least 5 minutes.

Neither patient nor clinician should talk during the rest or measurement. No use of phones.



Use a BP device that has been validated for accuracy (validatebp.org).

Use the correct cuff size on a bare arm.

Take 2 or more BP measurements at least 1-minute apart.

BP measurement should be done in a temperature-controlled room.

COR	RECOMMENDATIONS
1	When diagnosing and managing high BP in adults, standardized methods are recommended for the accurate measurement and documentation of in-office BP.
2a	When measuring in-office BP in adults, it is reasonable to use the oscillometric method with an automated device over the auscultatory method.

Abbreviation: BP indicates blood pressure.

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Essential Laboratory Tests and Diagnostic Procedures

- When hypertension is suspected or confirmed, laboratory and diagnostic procedures are a standard part of the evaluation.
- This information will provide a baseline and will inform management decisions including the need for additional testing.
- These tests should be repeated at least annually to monitor for potential adverse effects of therapies including kidney disease progression and changes in predicted CVD risk.
- Additional diagnostic evaluation should be considered when secondary causes of hypertension are suspected.

COR	RECOMMENDATIONS
1	For adults who are diagnosed with hypertension, laboratory tests (ie, complete blood count, serum electrolytes, serum creatinine, lipid profile, glucose or Hgb A1c, thyroid-stimulating hormone, urinalysis, and urine albumin to creatinine ratio) and diagnostic procedures (12-lead ECG) should be performed to optimize management.

Routine Diagnostic Studies

- Complete blood count
- Serum sodium, potassium, calcium
- Serum creatinine with estimation of GFR
- Lipid profile
- Fasting blood glucose or Hemoglobin A1c
- Thyroid-stimulating hormone
- Urinalysis
- Urine albumin to creatinine ratio; urine protein to creatinine ratio
- Electrocardiogram

Abbreviations: CVD indicates cardiovascular disease; ECG, electrocardiogram; and Hgb, hemoglobin.

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From Clinic to Home: Blood Pressure Monitoring

COR	RECOMMENDATIONS
1	In adults with suspected hypertension, out-of-office BP measurements by either ABPM or HBPM are recommended to confirm the diagnosis of hypertension.
1	In adults who are taking antihypertensive medication, HBPM is recommended for monitoring the titration of BP-lowering medication, along with co-interventions such as patient education, telehealth counseling, and clinical interventions.
3: No Benefit	In adults, the use of cuffless BP devices is not recommended for the diagnosis or management of high BP.

Corresponding Ambulatory and Home Blood Values Measurement to Office Values

Office (mmHg)	HBPM (mmHg)	Daytime ABPM (mmHg)	Nightime ABPM (mmHg)	24-Hour ABPM (mmHg)
120/80	120/80	120/80	100/65	115/75
130/80	130/80	130/80	110/65	125/75
140/90	135/85	135/85	120/70	130/80
160/100	145/90	145/90	140/85	145/90

Abbreviations: ABPM indicates ambulatory blood pressure monitoring; BP, blood pressure; and HBPM, home blood pressure monitoring.

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Hypertension Causes, from Lifestyle to Genetics

Dietary Intake Factors

- Higher sodium intake
- Lower potassium intake
- Lower calcium/ magnesium intake
- Lower diet quality *(lower intake of fruits/ vegetables, plant proteins, fiber)*
- Alcohol intake

Non-Dietary Factors

- Genetics variants
- Overweight/obesity
- Lower physical activity/fitness
- Sleep disturbances *(related to duration, quality, regularity and/or disordered breathing)*
- Psychosocial stressors
- Air pollution

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White-coat and Masked Hypertension

- White-coat hypertension: BP is high in the office setting and normal or elevated outside of the office setting
- Masked hypertension: BP is high outside of the office setting and normal or elevated in the office setting
- ABPM is preferred for excluding white-coat and masked hypertension among individuals not taking antihypertensives.
- Adults with in-office BP ≥160/100 mmHg should be promptly started on antihypertensives
- Studies have shown that individuals with white-coat and masked hypertension compared to those with sustained normotension are more likely to have sustained hypertension on follow-up.

Abbreviations: ABPM indicates ambulatory blood pressure monitoring; BP, blood pressure; DBP, diastolic blood pressure; and SBP, systolic blood pressure.

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White-coat and Masked Hypertension

COR	RECOMMENDATIONS
2a	In adults with untreated office SBP ≥130 mm Hg or DBP ≥80 mm Hg, and without office SBP ≥160 mm Hg or DBP ≥100 mm Hg, it is reasonable to exclude white-coat hypertension using out-of-office BP monitoring before a diagnosis of hypertension is made.
2a	In adults with white-coat hypertension, out-of-office BP monitoring is reasonable to exclude transition to a diagnosis of sustained hypertension.
2a	In adults with apparent treatment resistant hypertension on office BP, it is reasonable to exclude white-coat effect, a form of pseudoresistance, using out-of-office BP monitoring
2a	In adults who are taking antihypertensive medication and have elevated office BP (office SBP ≥130 mm Hg or DBP ≥80 mm Hg), but do not have resistant hypertension or office SBP ≥160 mm Hg or DBP ≥100 mm Hg, it is reasonable to exclude white-coat effect using out-of-office BP monitoring
2b	In adults with untreated office SBP <130 mm Hg and DBP <80 mm Hg, it may be reasonable to exclude masked hypertension using out-of-office BP monitoring
2b	In adults who are taking antihypertensive medication and have office SBP <130 mm Hg and DBP <80 mm Hg, it may be reasonable to exclude masked uncontrolled hypertension using out-of-office BP monitoring

Abbreviations: ABPM indicates ambulatory blood pressure monitoring; BP, blood pressure; DBP, diastolic blood pressure; and SBP, systolic blood pressure.

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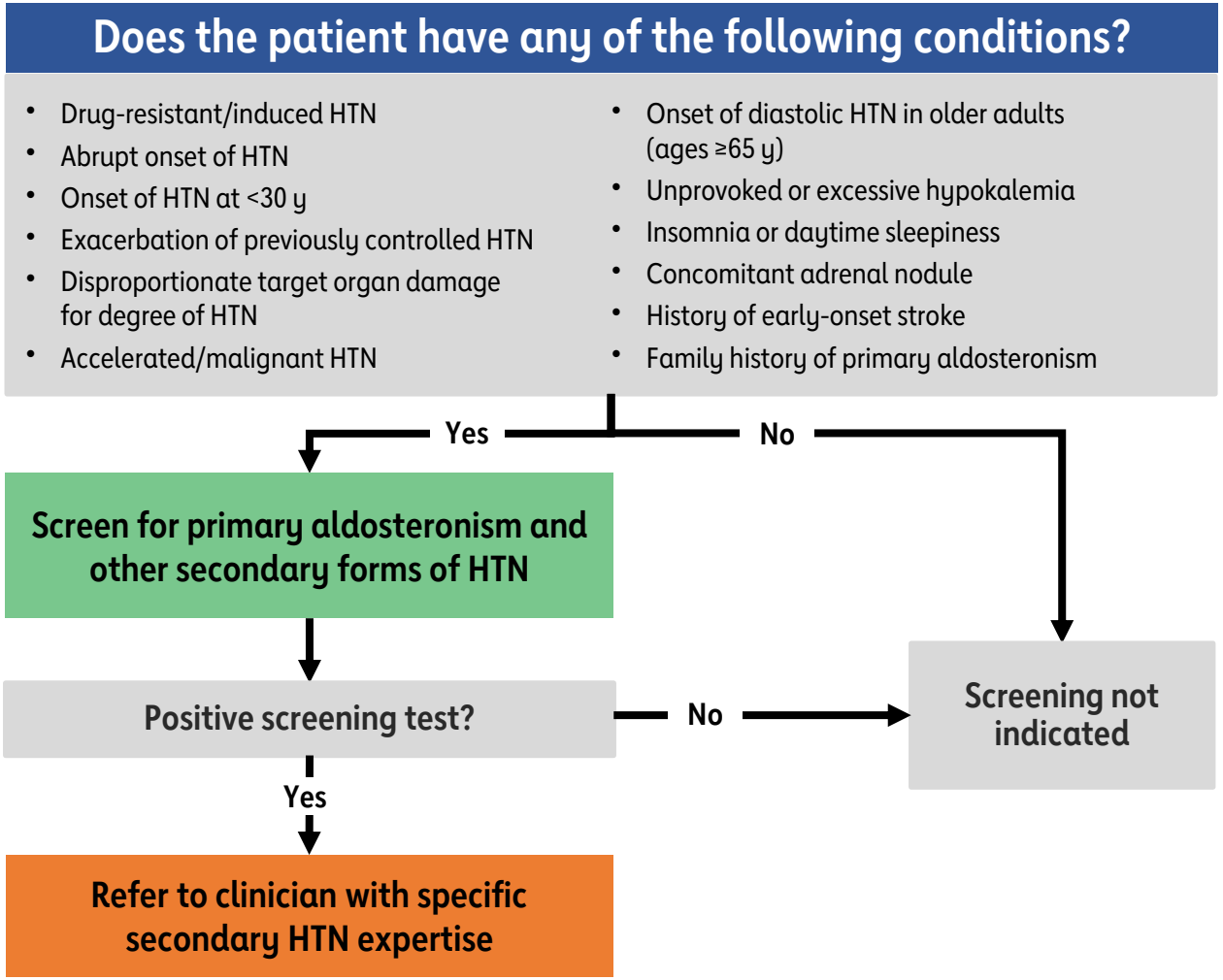
Secondary Forms of Hypertension


Does the patient have any of the following conditions?
Drug-resistant/induced HTN
Abrupt onset of HTN
Onset of HTN at <30 y
Exacerbation of previously controlled HTN
Disproportionate target organ damage for degree of HTN
Accelerated/malignant HTN
Onset of diastolic HTN in older adults (ages ≥65 y)
Unprovoked or excessive hypokalemia
Insomnia or daytime sleepiness
Concomitant adrenal nodule
History of early-onset stroke
Family history of primary aldosteronism
Yes
No
Screen for primary aldosteronism and other secondary forms of HTN
Positive screening test?
No
Screening not indicated
Yes
Refer to clinician with specific secondary HTN expertise

COR	RECOMMENDATIONS
1	In adults with hypertension, screening for specific forms of secondary hypertension is recommended when clinical suspicion is present to increase rates of detection, diagnosis, and specific targeted therapy.
1	In adults with resistant hypertension, screening for primary aldosteronism is recommended regardless of whether hypokalemia is present to increase rates of detection, diagnosis, and specific targeted therapy.
2a	In adults who a positive screening test for a form of secondary hypertension, referral to clinician who has expertise in that form of hypertension is reasonable for diagnostic confirmation and treatment.

Abbreviation: HTN indicates hypertension.

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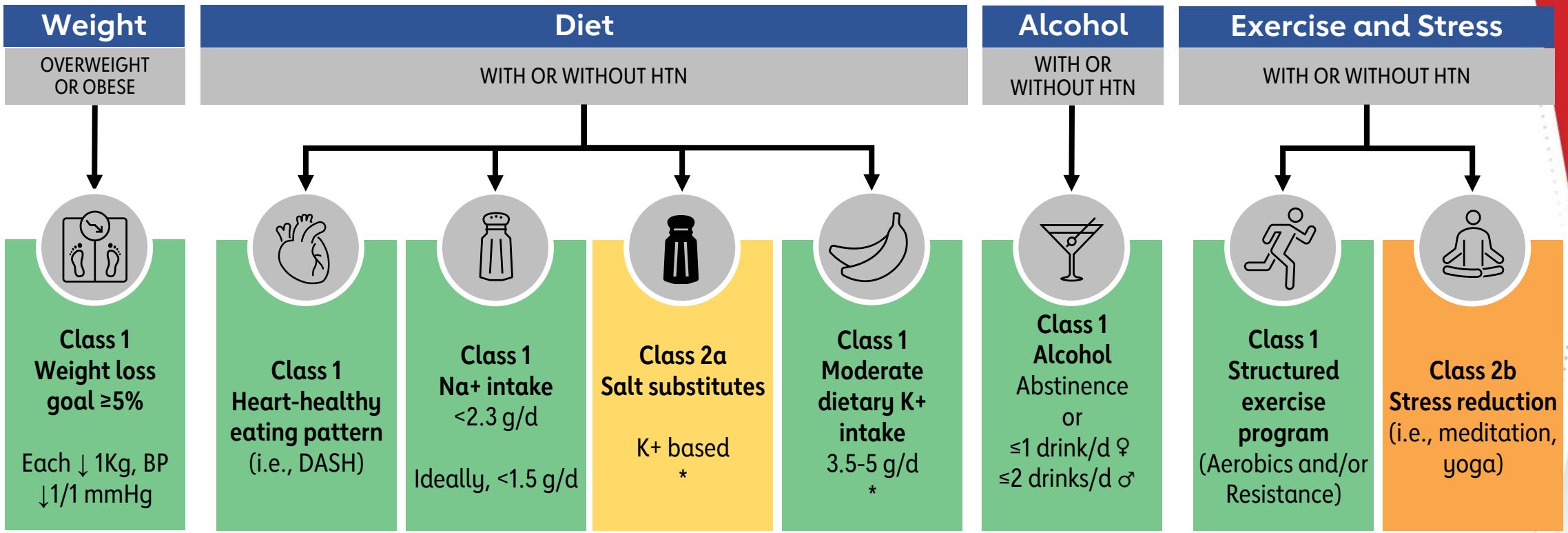
Blood pressure management: Lifestyle and psychosocial approaches



***Monitor potassium in those at risk for hyperkalemia**

Abbreviations: BP indicates blook pressure; DASH, Dietary Approaches to Stop Hypertension diet Kg, kilograms; and HTN, hypertension.

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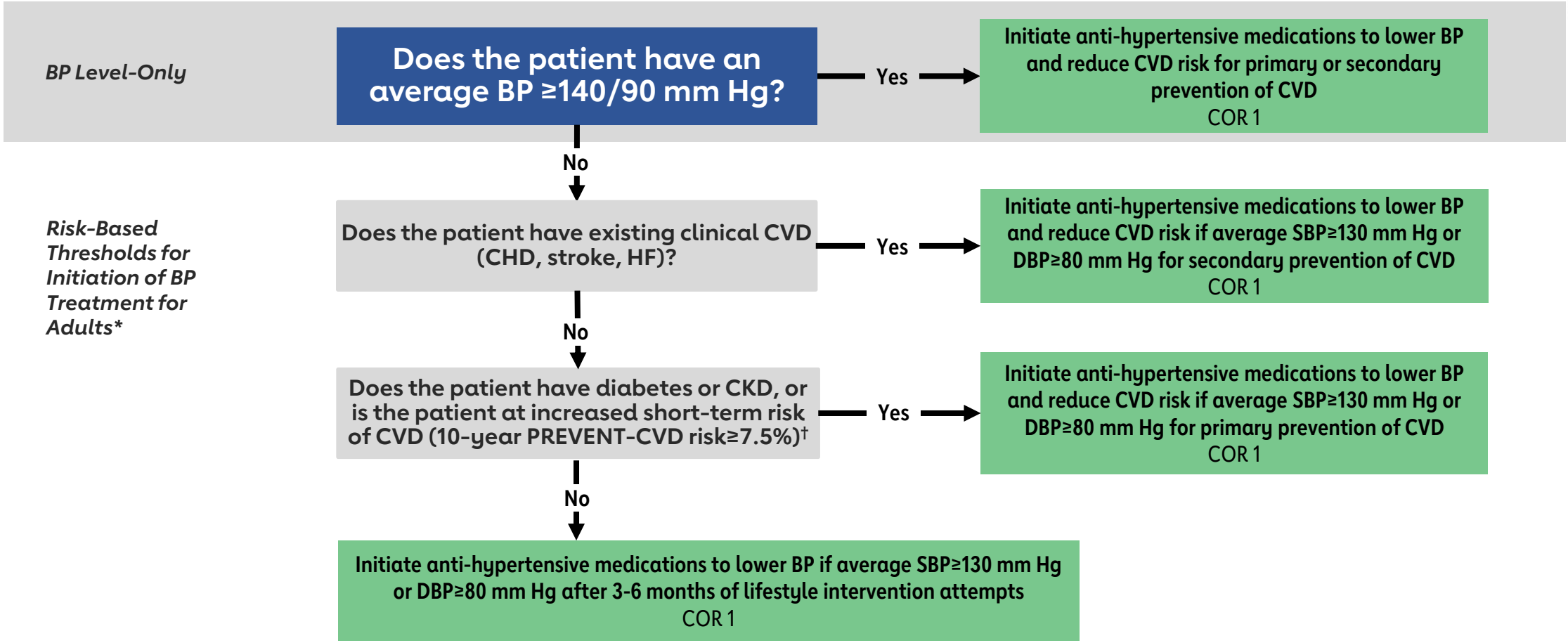
Use of Risk Based Thresholds for Initiation of BP Treatment


BP Level-Only
Does the patient have an average BP ≥140/90 mm Hg?
Yes
Initiate anti-hypertensive medications to lower BP and reduce CVD risk for primary or secondary prevention of CVD
COR 1
No
Risk-Based Thresholds for Initiation of BP Treatment for Adults*
Does the patient have existing clinical CVD (CHD, stroke, HF)?
Yes
Initiate anti-hypertensive medications to lower BP and reduce CVD risk if average SBP≥130 mm Hg or DBP≥80 mm Hg for secondary prevention of CVD
COR 1
No
Does the patient have diabetes or CKD, or is the patient at increased short-term risk of CVD (10-year PREVENT-CVD risk≥7.5%)†
Yes
Initiate anti-hypertensive medications to lower BP and reduce CVD risk if average SBP≥130 mm Hg or DBP≥80 mm Hg for primary prevention of CVD
COR 1
No
Initiate anti-hypertensive medications to lower BP if average SBP≥130 mm Hg or DBP≥80 mm Hg after 3-6 months of lifestyle intervention attempts
COR 1

Abbreviations: BP indicates blood pressure; CHD, coronary heart disease; CKD, chronic kidney disease; CVD, cardiovascular disease; DBP, diastolic blood pressure; HF, heart failure; PREVENT, Predicting Risk of CVD EVENTs; and SBP, systolic blood pressure.

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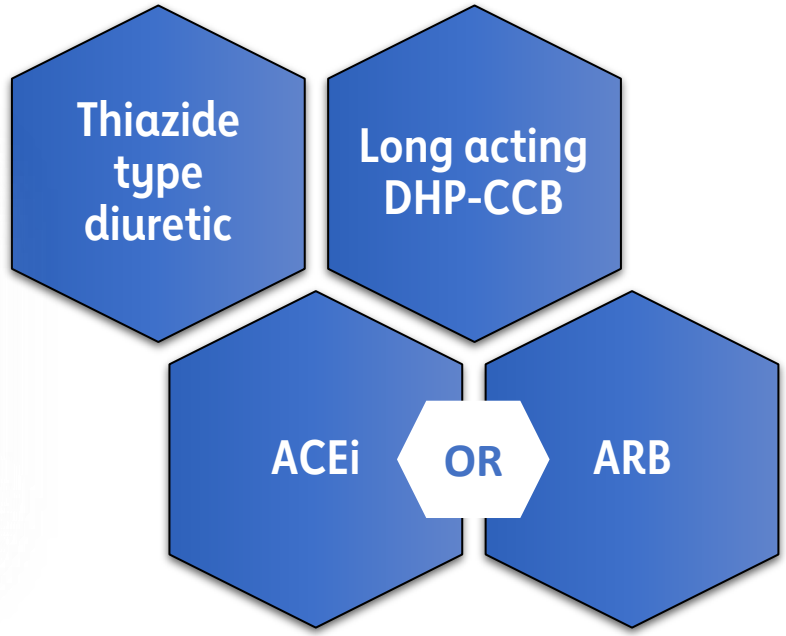
Initial Medication Selection for Treatment of Primary HTN

COR	RECOMMENDATIONS
1	For adults initiating antihypertensive drug therapy, thiazide-type diuretics, long-acting dihydropyridine CCBs, and ACEi or ARBs are recommended as first-line therapy to prevent CVD.



Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; CVD, cardiovascular disease; and LA DHP-CCB, Dihydropyridine Calcium Channel Blocker.

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Choice of initial monotherapy vs combination drug therapy

Stage 1 HTN*
Class 2a

SBP 130-139 mmHg
DBP 80-89 mmHg

Initiation of <u>a single</u> 1st line agent is reasonable.

Dosing titration and sequential addition of other agents as needed.

Stage 2 HTN*
Class 1

SBP ≥140 mmHg
DBP ≥90 mmHg

Some high-risk patients with stage 1 HTN.

Initiation of <u>two</u> 1st line agents of different classes.

Ideally, in a single pill combination to improve adherence.

Any stage HTN
Class 3: Harm

<u>Don't</u> combine ACEi, ARBs and/or renin inhibitors.

Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; and HTN, hypertension.

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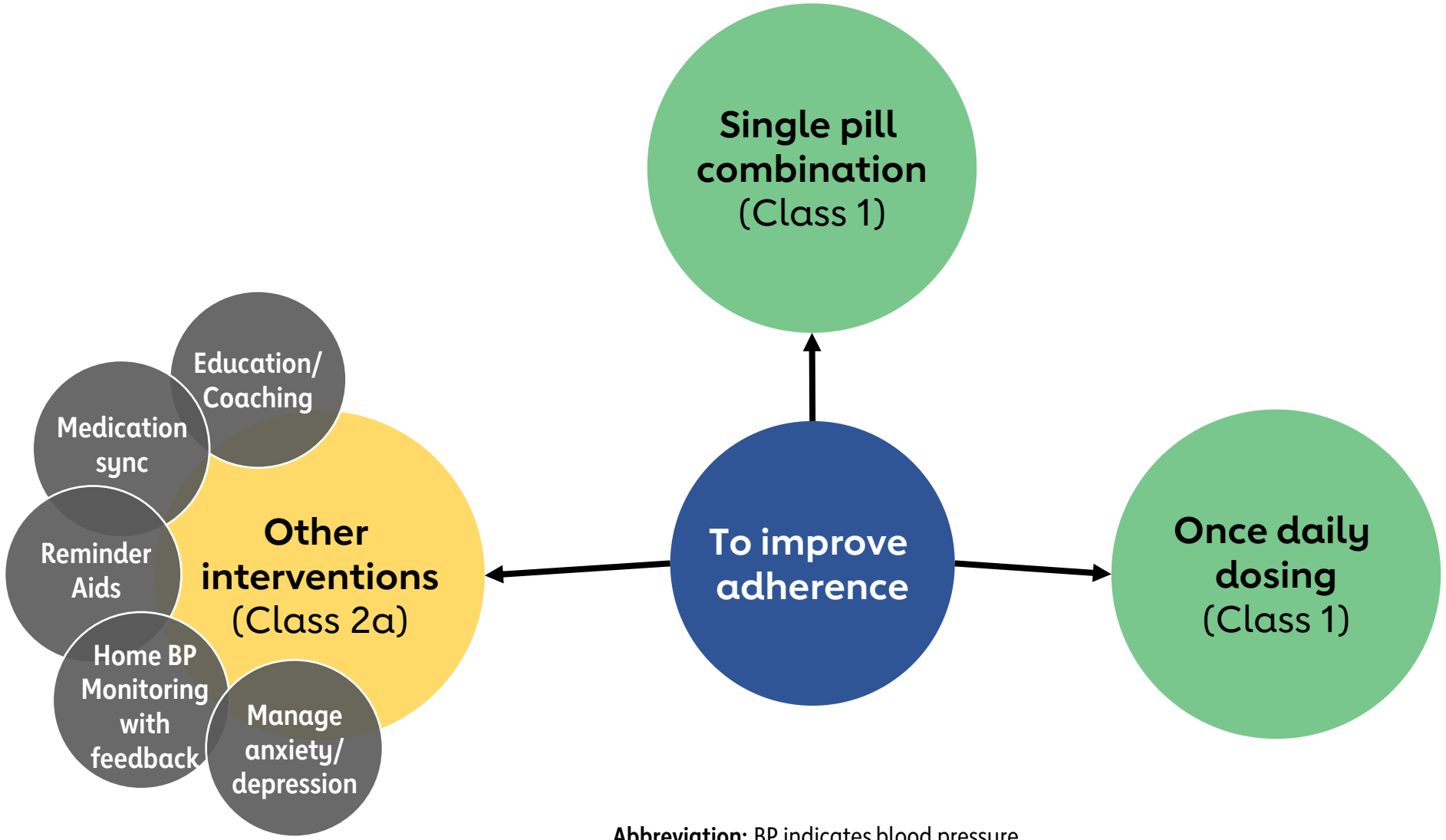
Antihypertension medication adherence strategies



Abbreviation: BP indicates blood pressure

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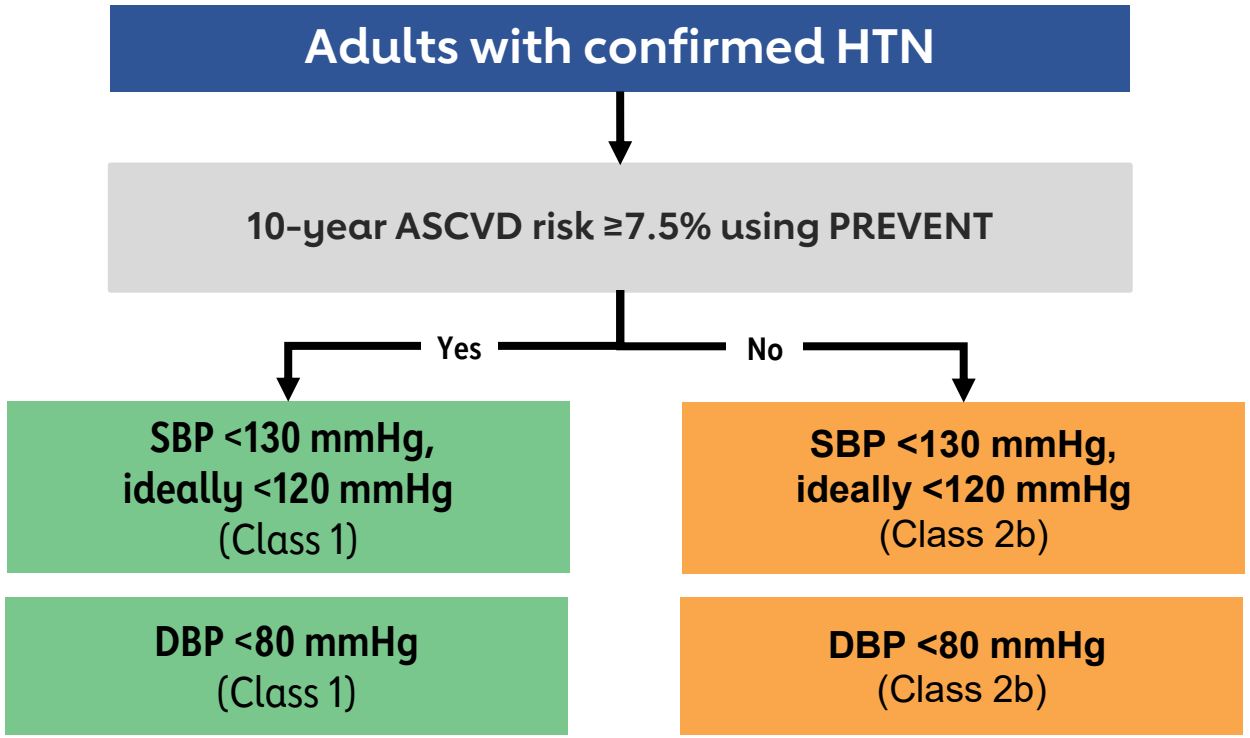
Blood pressure goals for patients with HTN


Adults with confirmed HTN
10-year ASCVD risk ≥7.5% using PREVENT
Yes
No
SBP <130 mmHg, ideally <120 mmHg (Class 1)
DBP <80 mmHg (Class 1)
SBP <130 mmHg, ideally <120 mmHg (Class 2b)
DBP <80 mmHg (Class 2b)

Abbreviations: ASCVD indicates atherosclerotic cardiovascular disease; BP, blood pressure; DBP, diastolic blood pressure; HTN, hypertension; PREVENT, Predicting Risk of CVD EVENTs; and SBP, systolic blood pressure.

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Hypertension Management with DM

Take Home Point:

Greater than 80 % of adults with T2D have HTN.
Intensive BP goals are associated with improved CV outcomes.

BP Goal

Use antihypertensive medication(s) for

SBP >130 mmHg
or
DBP > 80 mmHg

(Class 1)

Initial Management

All first-line agents are effective.

(ie. Thiazide type diuretics, CCB, ACEi and ARBs, etc)

(Class 1)

Special considerations: CKD

- If eGFR <60 ml/min/1.73m2 or moderate to severe albuminuria >30 mg/g; ACEi or ARB are recommended.
- If mild albuminuria (<30,g/g), ACEi or ARBs can delay progression of DM-related kidney disease.

(Class 1)

Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; BP, blood pressure; CV, cardiovascular; CCB, Calcium Channel Blocker; DBP, diastolic blood pressure; DM, diabetes mellitus; T2D, type two diabetes mellitus; and SBP, systolic blood pressure.

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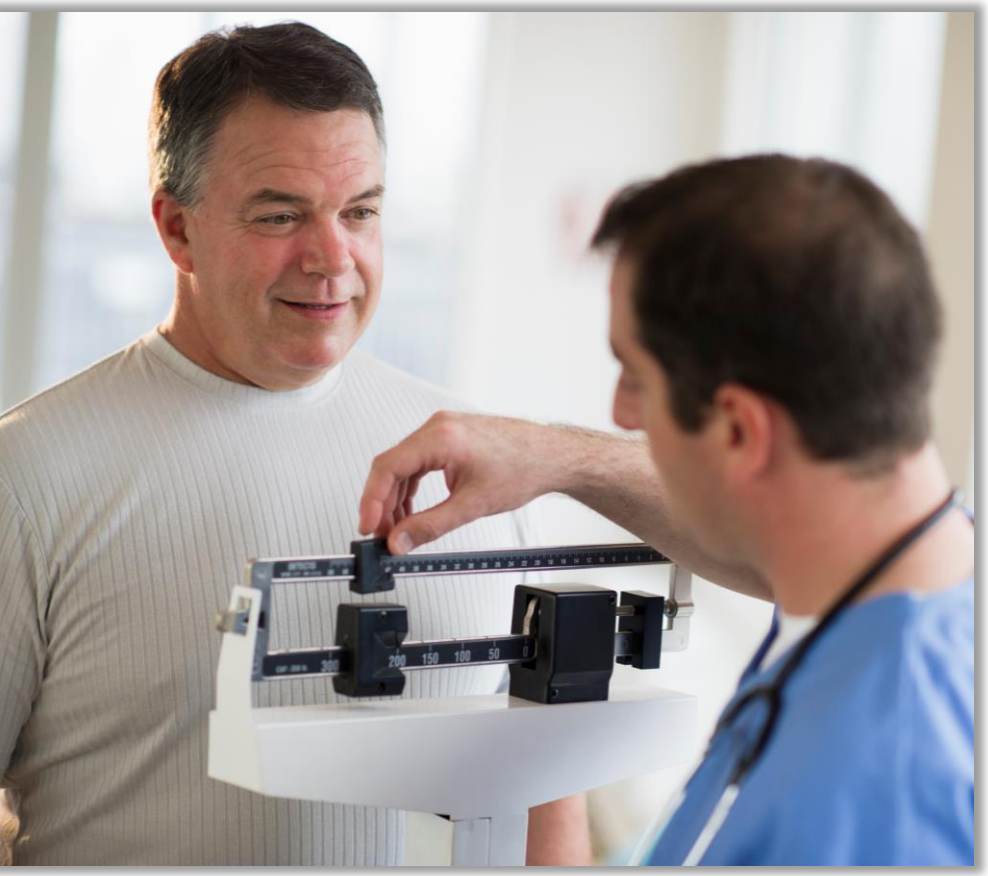
Hypertension Management with Obesity and Metabolic Syndrome



COR	RECOMMENDATIONS
2b	In adults with hypertension who also have overweight or obesity with a BMI ≥27 kg/m^2, incretin mimetics, like GLP-1 RAs, when used for weight management may be effective as an adjunct to lower BP
2b	In adults with hypertension who have obesity with a BMI≥35.0 kg/m^2, bariatric surgery for weight loss in combination with behavioral interventions and antihypertensive therapies may be effective at lowering BP.

Abbreviations: BMI indicates body mass index; BP, blood pressure; and GLP-1 RA, glucagon-like polypeptide-1 receptor agonist.

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Prevention of Heart Failure in Adults with HTN

COR	RECOMMENDATIONS
1	In adults with HTN, treat SBP to <130 mm Hg or DBP to <80 mm HG to prevent the progression of HF.

Abbreviations: DBP indicates diastolic blood pressure; HF, heart failure; HTN, hypertension; and SBP, systolic blood pressure.

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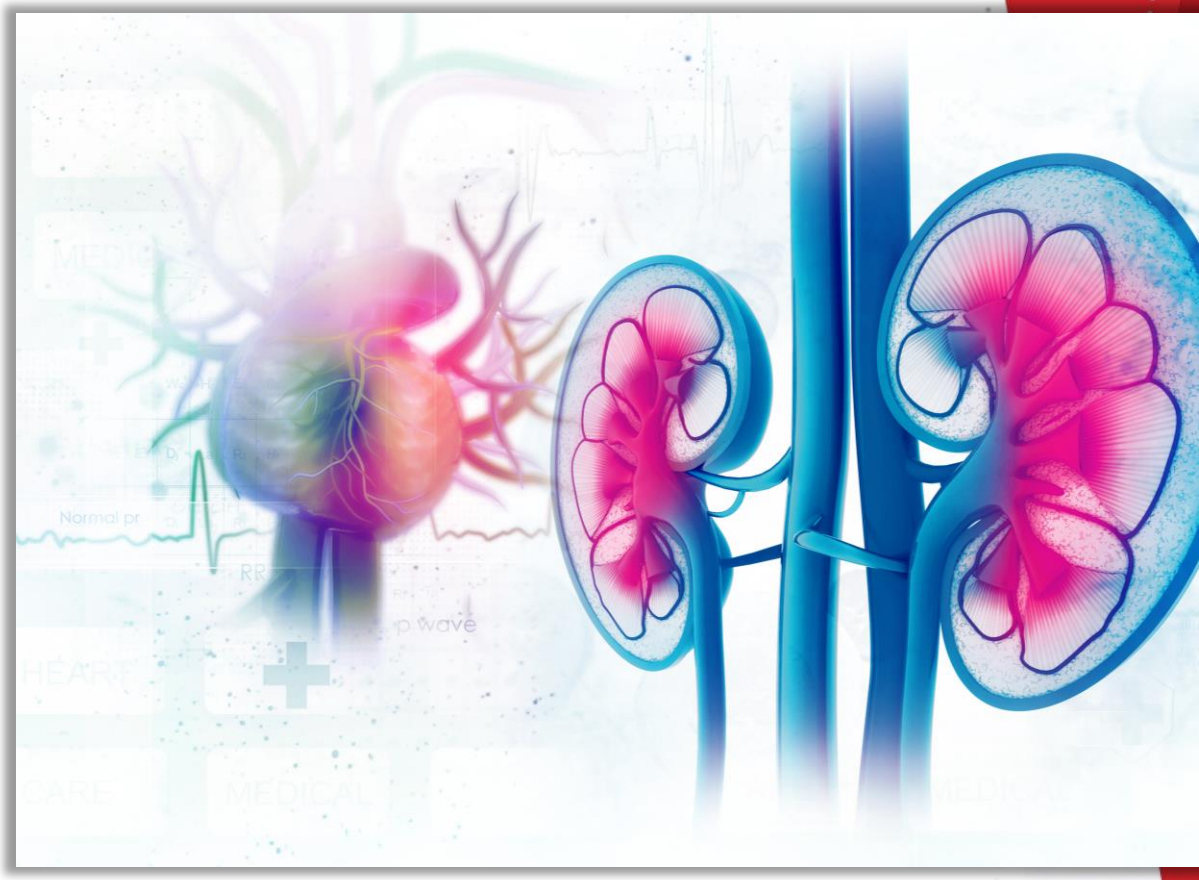
HTN Treatment with CKD

COR	RECOMMENDATIONS
1	If eGFR <60 ml/min/1.73m^2 or moderate to severe albuminuria ≥30 mg/g; SBP goal of <130 mmHg to decrease all-cause mortality.
1	RAASi (either ACEi or ARB but not both) is recommended to decrease CVD and delay progression of kidney disease.



Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; CKD, chronic kidney disease; CVD, cardiovascular disease; eGFR, estimated glomerular filtration rate; HTN, hypertension; and RAASi, renin-angiotensin-aldosterone system inhibitor.

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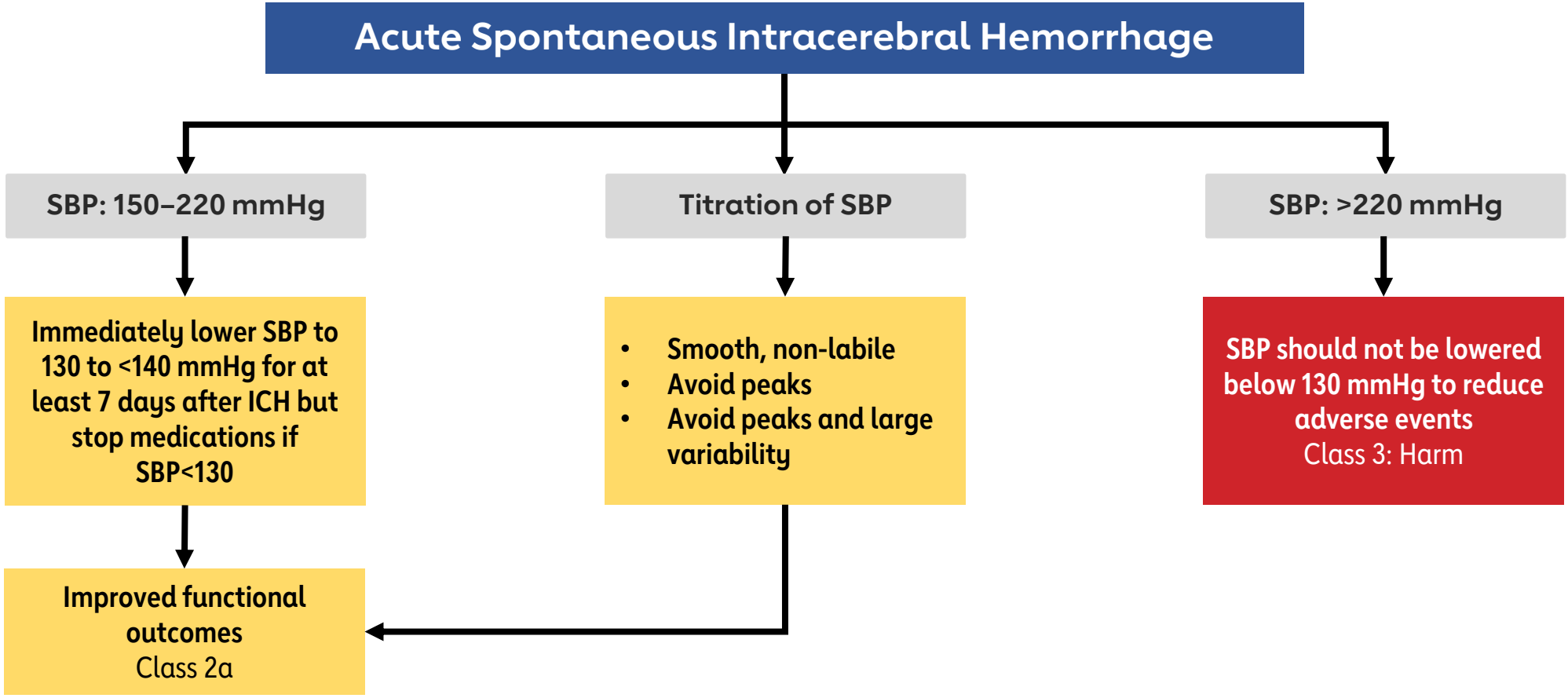
Intracerebral Hemorrhage


Acute Spontaneous Intracerebral Hemorrhage
SBP: 150–220 mmHg
Titration of SBP
SBP: >220 mmHg
Immediately lower SBP to 130 to <140 mmHg for at least 7 days after ICH but stop medications if SBP<130
Improved functional outcomes
Class 2a
Smooth, non-labile
Avoid peaks
Avoid peaks and large variability
SBP should not be lowered below 130 mmHg to reduce adverse events
Class 3: Harm

Abbreviations: ICH indicates intracerebral hemorrhage; and SBP, systolic blood pressure.

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Plan of Care for Adults with Uncontrolled HTN

COR	RECOMMENDATIONS
1	Team-based care approach is recommended.
1	Evidence-based care plan utilizing HBPM and team-based care that is responsive to addressing adverse SDOH is recommended.
1	An integrated treatment model that includes accurate BP measurement, prompt treatment, patient engagement, and ongoing review of HBPM is recommended to improve BP control.

Abbreviation: BP indicates blood pressure; HBPM, home blood pressure monitoring; HTN, hypertension; and SDOH, social determinants of health.

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Plan of Care for Adults with Uncontrolled HTN

COR	RECOMMENDATIONS
1	Health information technology is beneficial in improving BP control, access to care, and adherence to standards of care.
1	Use of electronic health record and patient registries is beneficial for screening and identification of hypertension to focus on those who need additional care.
2a	Telehealth interventions can be useful to reduce BP and improve office BP control.
1	Adults with uncontrolled hypertension placed on new or intensified medical therapy should have follow-up evaluations for medication adherence and response to treatment at monthly intervals until control is achieved.

Abbreviation: BP indicates blood pressure; and HTN, hypertension.

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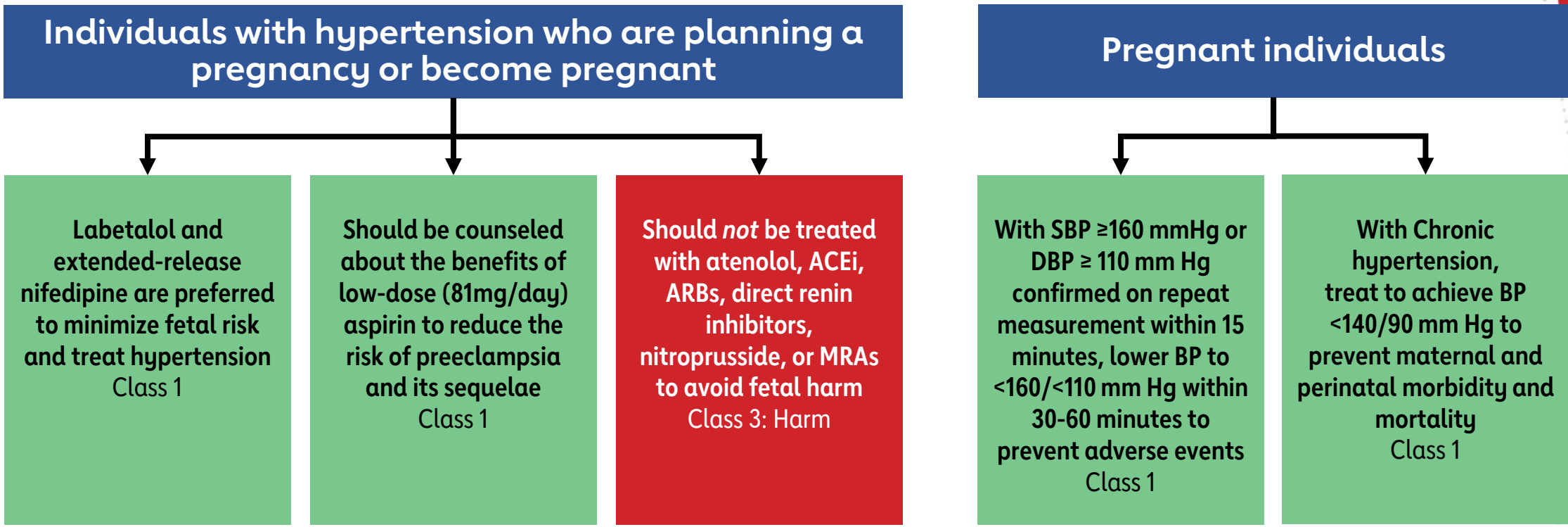
Hypertension and Pregnancy


Individuals with hypertension who are planning a pregnancy or become pregnant
Labetalol and extended-release nifedipine are preferred to minimize fetal risk and treat hypertension
Class 1
Should be counseled about the benefits of low-dose (81mg/day) aspirin to reduce the risk of preeclampsia and its sequelae
Class 1
Should *not* be treated with atenolol, ACEi, ARBs, direct renin inhibitors, nitroprusside, or MRAs to avoid fetal harm
Class 3: Harm
Pregnant individuals
With SBP ≥160 mmHg or DBP ≥ 110 mm Hg confirmed on repeat measurement within 15 minutes, lower BP to <160/<110 mm Hg within 30-60 minutes to prevent adverse events
Class 1
With Chronic hypertension, treat to achieve BP <140/90 mm Hg to prevent maternal and perinatal morbidity and mortality
Class 1

Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; BP, blood pressure; DBP, diastolic blood pressure; HTN, hypertension; MRA, mineralocorticoid receptor antagonist; SBP, systolic blood pressure; and TX, treatment.

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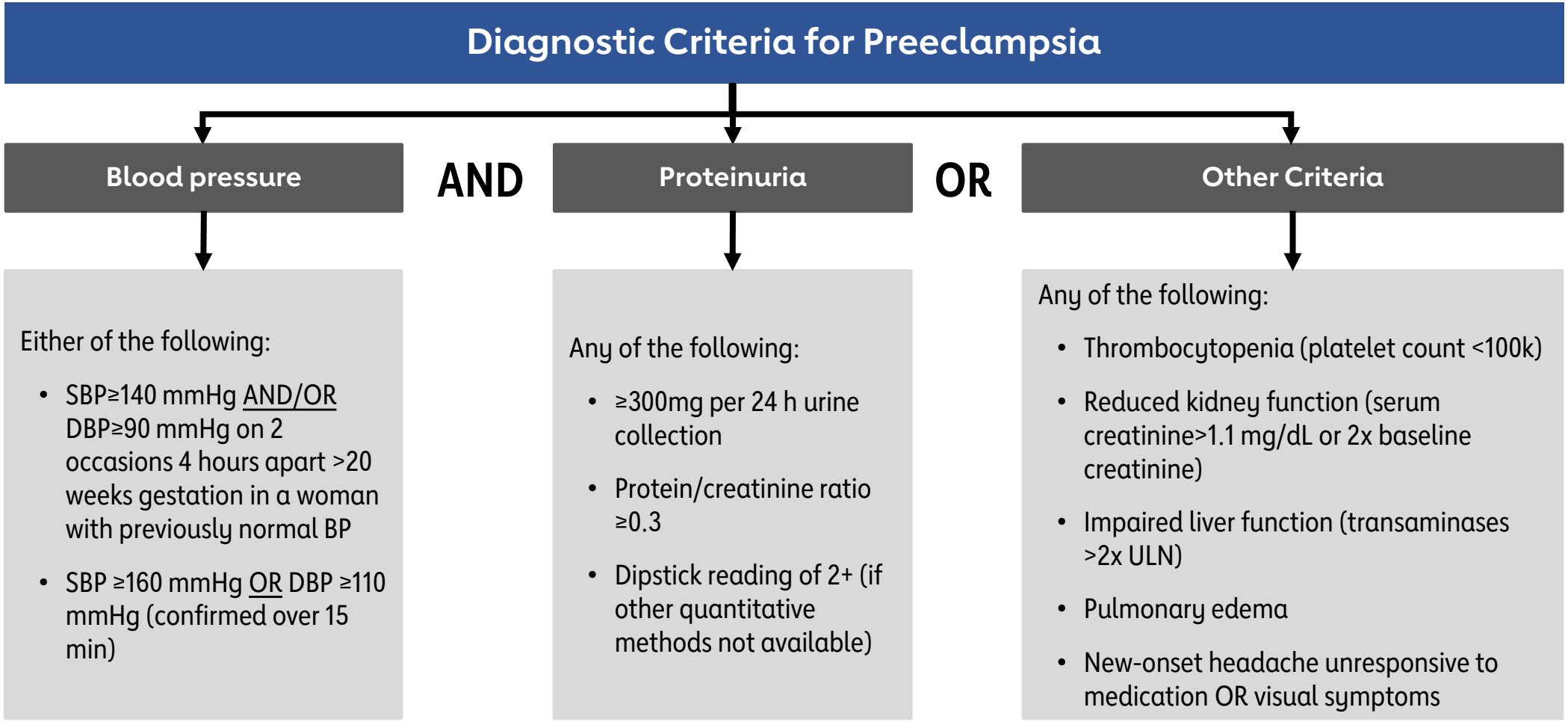
Diagnostic Criteria for Preeclampsia


Diagnostic Criteria for Preeclampsia
Blood pressure
AND
Proteinuria
OR
Other Criteria
Either of the following:
• SBP≥140 mmHg AND/OR DBP≥90 mmHg on 2 occasions 4 hours apart >20 weeks gestation in a woman with previously normal BP
• SBP ≥160 mmHg OR DBP ≥110 mmHg (confirmed over 15 min)
Any of the following:
• ≥300mg per 24 h urine collection
• Protein/creatinine ratio ≥0.3
• Dipstick reading of 2+ (if other quantitative methods not available)
Any of the following:
• Thrombocytopenia (platelet count <100k)
• Reduced kidney function (serum creatinine>1.1 mg/dL or 2x baseline creatinine)
• Impaired liver function (transaminases >2x ULN)
• Pulmonary edema
• New-onset headache unresponsive to medication OR visual symptoms

Abbreviations: BP indicates blood pressure; DBP, diastolic blood pressure; SBP, systolic blood pressure; and ULN, upper limit of normal.

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Management of Resistant Hypertension

Resistant Hypertension

- Office BP ≥ 130/80 on ≥ 3 antihypertensives (ACEi/ARB + CCB + thiazide diuretic)
- Office BP < 130/80 but requires ≥ 4 antihypertensives

Workup and Address Potential Causes

- Exclude psuedoresistance (ambulatory BPs, medication adherence)
- Review and remove interfering medications
- Screen for secondary causes (primary aldosteronism, OSA, renal parenchymal disease and renovascular disease, etc.)

Class 1

Contraindications or Intolerant of MRA?

No

Add MRA

In adults with uncontrolled resistant hypertension despite optimal treatment with first-line antihypertensive therapy and with an eGFR of ≥45 ml/min/1.73 m^2

Class 1

Yes

Adding an alternative second line agent is reasonable to control BP

- Amiloride
- Beta Blocker
- Alpha Blocker
- Central sympatholytic drug
- Dual endothelin receptor antagonist
- Direct vasodilator

Class 2a

Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; BP, blood pressure; CCB, Calcium Channel Blocker; eGFR, estimated glomerular filtration rate; MRA, mineralocorticoid receptor antagonist; and OSA, obstructive sleep apnea.

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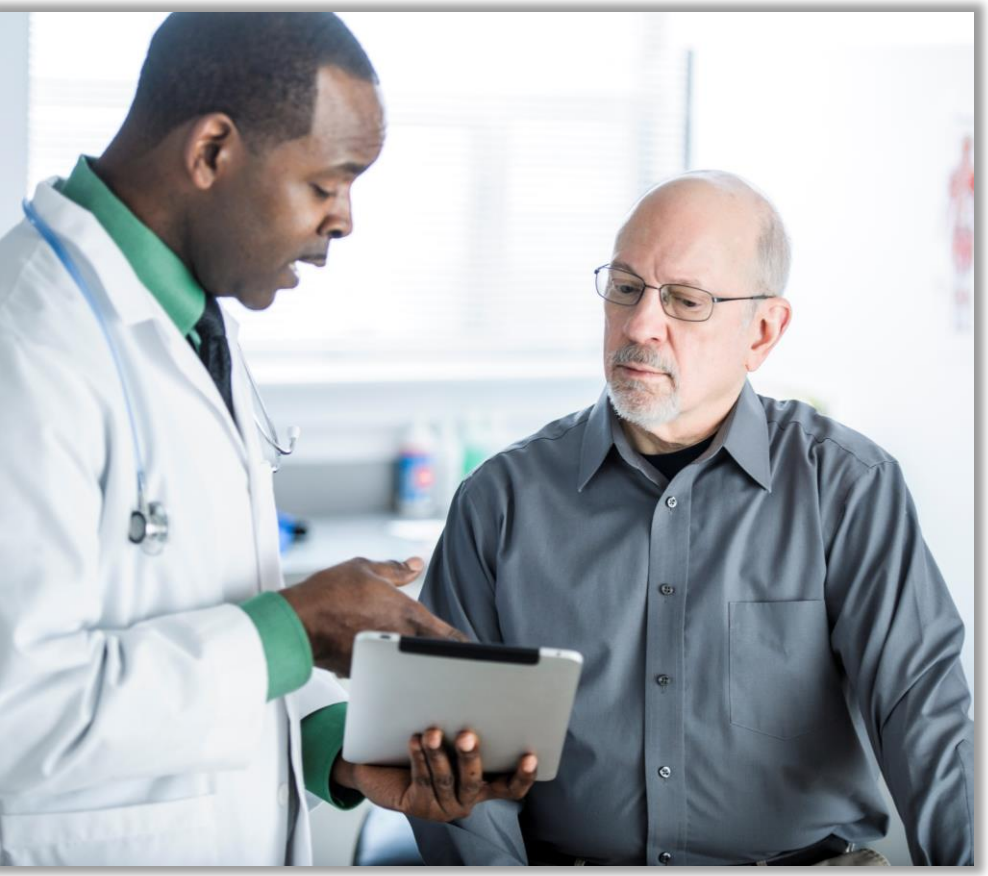
Renal Denervation (RDN)



COR	RECOMMENDATIONS
2b	RDN Therapy may be a reasonable adjunct treatment to meds and lifestyle modifications to reduce BP in those with Resistant Hypertension Patients *office SBP 140-180 mmHg and DBP ≥ 90 mm Hg AND eGFR ≥40 ml/min/1.73m^2 despite optimal medical therapy and/or side effects from medications*
1	All Patients who are being considered for RDN should be evaluated by a Multidisciplinary Team with expertise in resistant hypertension and RDN.
1	For patients who are being considered for RDN, the benefits and risks of the procedure should be discussed as part of the Shared Decision-Making process.

Abbreviations: BP indicates blood pressure; DBP, diastolic blood pressure; eGFR, estimated glomerular filtration rate; RDN, renal denervation; and SBP, systolic blood pressure.

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Orthostatic Hypotension

COR	RECOMMENDATIONS
1	In adults with hypertension, improved BP control is recommended to reduce the risk for orthostatic hypotension (OH).
2a	In adults receiving intensive BP lowering therapy with asymptomatic OH, treatment with a goal of SBP <130 mm Hg is reasonable due to increased CVD and mortality benefit
2a	In adults with hypertension initiating treatment or adding medication with a goal of SBP <130 mm Hg, assessment for symptomatic OH is reasonable to detect other chronic conditions

Abbreviations: BP indicates blood pressure; CVD, cardiovascular disease; OH, orthostatic hypertension; and SBP, systolic blood pressure.

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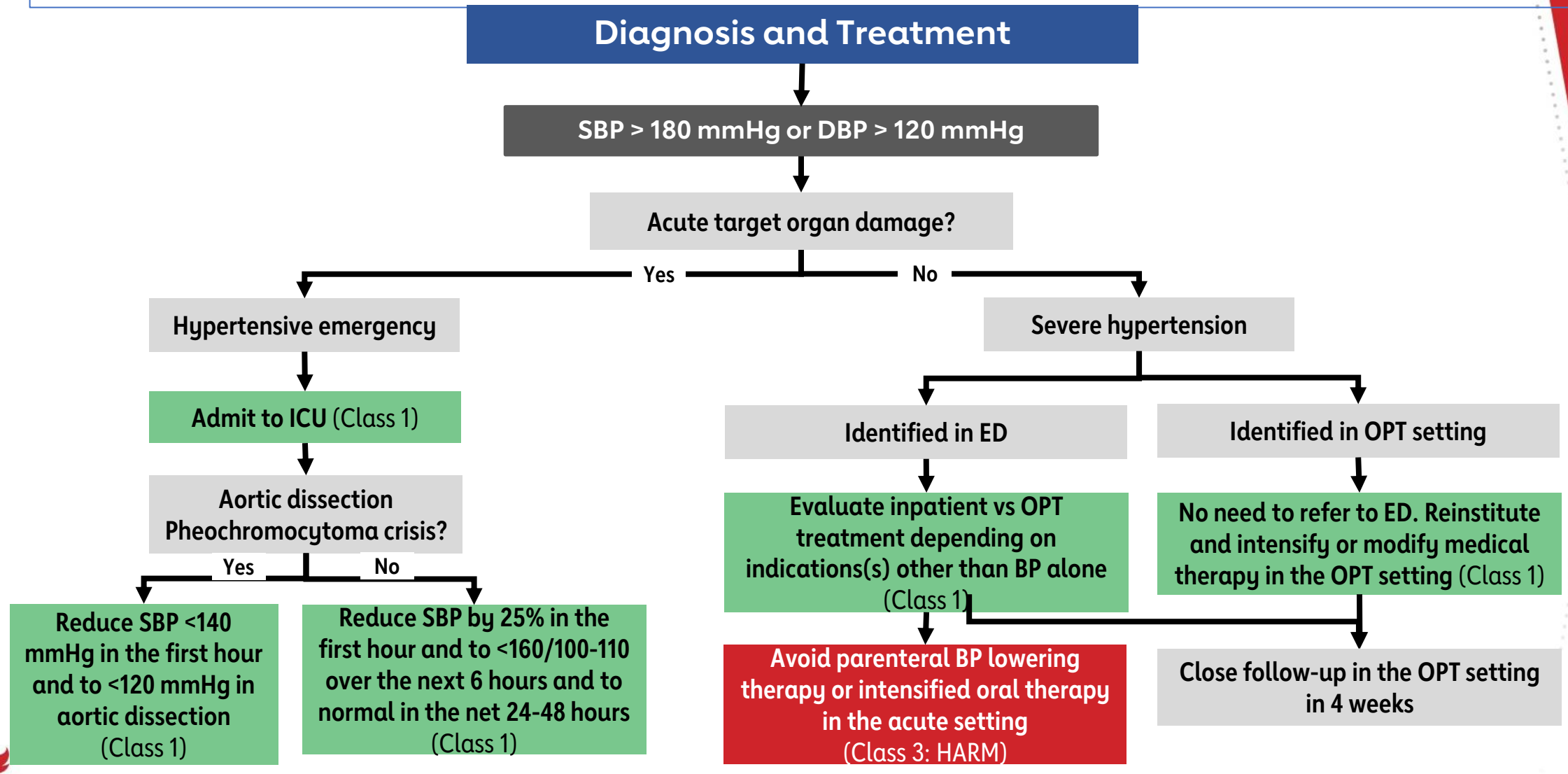
Severe Hypertension and Hypertensive Emergencies


Diagnosis and Treatment
SBP > 180 mmHg or DBP > 120 mmHg
Acute target organ damage?
Yes
No
Hypertensive emergency
Admit to ICU (Class 1)
Aortic dissection Pheochromocytoma crisis?
Yes
No
Reduce SBP <140 mmHg in the first hour and to <120 mmHg in aortic dissection (Class 1)
Reduce SBP by 25% in the first hour and to <160/100-110 over the next 6 hours and to normal in the net 24-48 hours (Class 1)
Severe hypertension
Identified in ED
Identified in OPT setting
Evaluate inpatient vs OPT treatment depending on indications(s) other than BP alone (Class 1)
No need to refer to ED. Reinstitute and intensify or modify medical therapy in the OPT setting (Class 1)
Avoid parenteral BP lowering therapy or intensified oral therapy in the acute setting (Class 3: HARM)
Close follow-up in the OPT setting in 4 weeks

Abbreviations: DBP indicates diastolic blood pressure; ED, emergency department; ICU, intensive care unit; OPT, outpatient; and SBP, systolic blood pressure.

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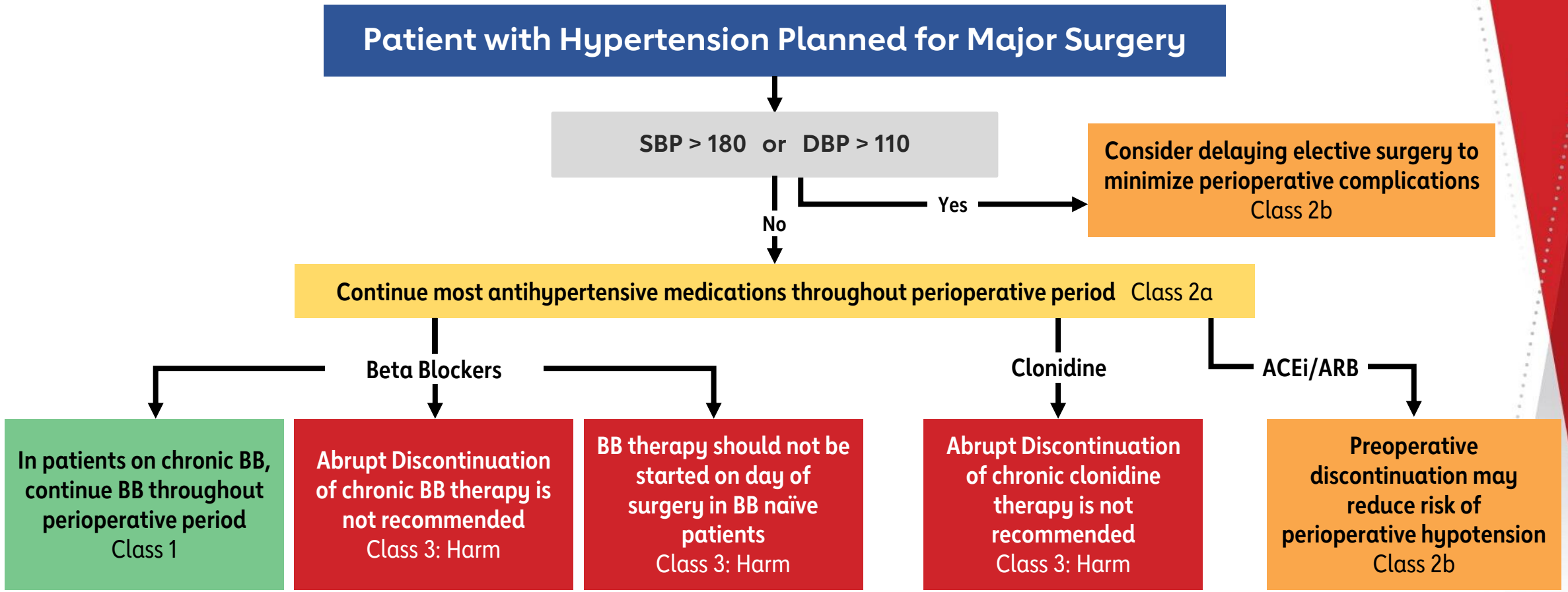
Patients Scheduled for Surgical Procedures


Patient with Hypertension Planned for Major Surgery
SBP > 180 or DBP > 110
Yes
Consider delaying elective surgery to minimize perioperative complications
Class 2b
No
Continue most antihypertensive medications throughout perioperative period Class 2a
Beta Blockers
Clonidine
ACEi/ARB
In patients on chronic BB, continue BB throughout perioperative period
Class 1
Abrupt Discontinuation of chronic BB therapy is not recommended
Class 3: Harm
BB therapy should not be started on day of surgery in BB naïve patients
Class 3: Harm
Abrupt Discontinuation of chronic clonidine therapy is not recommended
Class 3: Harm
Preoperative discontinuation may reduce risk of perioperative hypotension
Class 2b

Abbreviations: ACEi indicates Angiotensin Converting Enzyme inhibitors; ARB, Angiotensin Receptor Blocker; BB, beta blocker; DBP, diastolic blood pressure; and SBP, systolic blood pressure.

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Evidence Gaps and Future Directions

- Research to improve screening and implementation strategies for BP control
- BP targets and long-term benefits in younger adults
- Studies of patients with white coat HTN and their long-term risk
- Optimal management of pregnant patients
- Understand genetic and epigenetic risk factors for hypertension
- Understand intersection of BP race/ethnicity and social determinants of health
- Identify alternative and accurate methods to measure BP

Abbreviation: BP indicates blood pressure

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